National Institute of Environmental Health Sciences

Air pollution and allergens

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Abstract:

It is well known that the prevalence of allergic diseases has increased in recent decades in the industrialized world. Exposure to environmental pollutants may partially account for this increased prevalence. In effect, air pollution is a growing public health problem. In Europe, the main source of air pollution due to particles in suspension is represented by motor vehicles--particularly those that use diesel fuel. Diesel exhaust particles (DEPs) are composed of a carbon core upon which high-molecular weight organic chemical components and heavy metals deposit. Over 80% of all DEPs are in the ultrafine particle range (< 0.1 pm in diameter). Air pollutants not only have a direct or indirect effect upon the individual, but also exert important actions upon aeroallergens. Pollen in heavily polluted zones can express a larger amount of proteins described as being allergenic. Through physical contact with the pollen particles, DEPs can disrupt the former, leading to the release of paucimicronic particles and transporting them by air--thus facilitating their penetration of the human airways. Climate change in part gives rise to variations in the temperature pattern characterizing the different seasons of the year. Thus, plants may vary their pollination calendar, advancing and prolonging their pollination period. In addition, in the presence of high CO2 concentrations and temperatures, plants increase their pollen output. Climate change may also lead to the extinction of species, and to the consolidation of non-native species--with the subsequent risk of allergic sensitization among the exposed human population. In conclusion, there is sufficient scientific evidence on the effect of air pollution upon allergens, increasing exposure to the latter, their concentration and/or biological allergenic activity.

Source: Ask your librarian to help locate this item.

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Ecosystem Changes

Air Pollution: Allergens, Particulate Matter

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

☐ Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

☐ Other Health Impact

Other Health Impact: Allergic diseases

Resource Type: ☑

format or standard characteristic of resource

☐ Review

Timescale: ☑

time period studied

☐ Time Scale Unspecified